Nangarhar University Social Science Journal

e-ISSN: 3079-2398 (Online) p-ISSN: 3079-238X (Print)

NUSSJ

Vol:3(04), Oct-Dec: 2026

Journal Homepage: https://nussj.nu.edu.af

RESEARCH ARTICLE

The Economic Impact of the 2026 Strait of Hormuz Disruption on Global Crude Oil Prices: Evidence from Daily WTI Market Data

Irfan ullah Stanikzai[1], *Matiullah Subhani*[2*], *Abdul Khabir Mukhlis*[3]

1 Vice Chancellor of Academic Research of Rokhan University, Jalalabad, Afghanistan.

2 Department of Commerce, Faculty of Economics, Nangarhar University, Jalalabad, Afghanistan.

3 Department of Commerce, Faculty of Economics, Nangarhar University, Jalalabad, Afghanistan.

ABSTRACT

This study examined the influence of work-life balance on job satisfaction and turnover intention among university lecturers in Afghanistan. A quantitative research approach was employed, and data were collected from 450 lecturers working at five public and private universities in Afghanistan using convenience sampling. Data were gathered through a structured questionnaire using established measures of work-life balance, job satisfaction, and turnover intention. The data were analyzed using descriptive statistics and General Linear Model (GLM) multivariate analysis. The findings revealed a statistically significant overall multivariate association between work-life balance, job satisfaction, and turnover intention. Work-life balance had a significant positive association with job satisfaction, whereas its association with turnover intention was also positive and statistically significant but considerably weaker, contrary to the hypothesized negative relationship. The findings indicate that work-life balance is substantially more strongly associated with lecturers' job satisfaction than with their turnover intention. The study highlights the importance of supporting lecturers in balancing their professional and personal responsibilities while recognizing that turnover intention may be influenced by factors beyond work-life balance.

ARTICLE INFO

Keywords: *Economic Impact, Strait of Hormuz, Global Crude Oil, WTI Market.*

Article History

Received: 12-09-2026

Accepted: 11-11-2026

Published: 20-11-2026

Cite this Article

Stanikzai, I. U., Subhani, M., & Mukhlis, A. K. (2026). The Economic Impact of the 2026 Strait of Hormuz Disruption on Global Crude Oil Prices: Evidence from Daily WTI Market Data: Impact of the 2026 Disruption on Daily WTI Crude Oil Prices. Nangarhar University Social Science Journal, 3(04), 113–129. https://doi.org/10.70436/nussj.v3i04.106

Introduction

Crude oil is one of the most important commodities in the global economy, playing a central role in transportation, industrial production, electricity generation, international trade, and overall economic activity. Changes in crude oil prices can have substantial economic consequences by affecting production and transportation costs, inflation, household purchasing power, corporate profitability, trade balances, and economic growth. Because global oil markets are highly interconnected, disruptions to major oil-producing regions and transportation routes can rapidly transmit supply uncertainty across international markets. Consequently, the security and stability of major maritime energy routes are important not only for energy markets but also for broader global economic stability.

Among the world's major maritime energy routes, the Strait of Hormuz occupies a particularly important position because it connects the Persian Gulf with international markets and facilitates the transportation of substantial quantities of crude oil and other energy products. Its strategic location makes the Strait highly sensitive to geopolitical tensions, military conflicts, security threats, and disruptions to maritime transportation. Any significant interruption in the movement of oil through this route can create concerns regarding global oil availability, increase uncertainty among market participants, and generate upward pressure

**Corresponding Author*:

Email: matiullahsubhani4547@gmail.com **(Subhani M)**

https://doi.org/10.70436/nussj.v3i04.106

© 2024 The Authors. Published by Nangarhar University, this is an open access article published under the CC-BY license https://creativecommons.org/licenses/by/4.0

on crude oil prices. Such price shocks may subsequently spread throughout the wider economy through higher energy, transportation, logistics, and production costs.

The severe disruption of the Strait of Hormuz beginning on 28 February 2026 therefore represents an important economic event for examining the response of international crude oil markets. The disruption generated considerable uncertainty regarding the continuity of global energy supplies and is accompanied by substantial movements in crude oil prices (IEA, 2026). From an economic perspective, such an event can be understood as a major external supply shock capable of changing both the level and behavior of energy prices. Examining the market response is particularly important because the economic consequences of a disruption may not be limited to an initial price increase. Markets may experience an immediate shock followed by continued adjustment as producers, traders, governments, and consumers respond to changing supply conditions and expectations.

West Texas Intermediate (WTI) crude oil provides an important market-based indicator for examining these price dynamics. Daily WTI market data allow changes in crude oil prices to be observed at a sufficiently high frequency to identify short-run market reactions surrounding a major geopolitical supply disruption. Rather than examining only average prices before and after the event, analyzing daily observations makes it possible to distinguish between the immediate market response and subsequent changes in the price trend. This distinction is economically important because an abrupt price shock and a persistent change in market trajectory can have different implications for businesses, consumers, investors, and policymakers (Lopez Bernal et al., 2017).

Previous research has emphasized the strategic importance of the Strait of Hormuz for international energy transportation and the risks that regional geopolitical tensions pose to energy security and trade (Sayın & Kılıc, 2020). More recent assessments indicate that disruptions to this corridor can transmit shocks across supply chains and commodity markets, increase transport and import costs, and intensify inflationary and fiscal pressures, particularly in vulnerable economies (UN Trade and Development [UNCTAD], 2026).

Against this background, this study examines the economic impact of the 2026 Strait of Hormuz disruption on global crude oil prices using daily WTI market data from August 2025 to August 2026. Specifically, the study investigates WTI crude oil price movements before, during, and after the severe disruption; estimates whether the disruption is associated with a significant immediate change in crude oil prices; and determines whether the subsequent price trend changed significantly. An interrupted time-series approach is employed to distinguish the immediate level effect of the disruption from changes in the post-disruption price trajectory. By providing empirical evidence on crude oil market responses to a major geopolitical supply shock, the study contributes to the literature on energy economics, geopolitical risk, and commodity-market dynamics and offers practical implications for energy-security policy, business risk management, supply diversification, and economic resilience.

Problem Statement

The Strait of Hormuz is a strategically important route for global oil transportation, and disruptions to shipping through this corridor can affect international oil supplies and crude oil prices. However, comparisons of average prices before and after the 2026 disruption cannot distinguish an abrupt market response from a subsequent change in the price trend. Daily WTI closing-price data are therefore needed to capture short-run price movements around the first post-disruption trading day, 2 March 2026, which may be obscured by weekly or monthly averages. An interrupted time-series (ITS) approach is appropriate because it estimates the immediate change in the price level and the subsequent change in trend relative to the pre-disruption trajectory (Lopez Bernal et al., 2017). Accordingly, this study uses daily WTI data from August 2025 to August 2026 to examine whether the disruption was associated with a significant immediate price change and a change in the subsequent price trend.

Research Questions

What is the trend of daily WTI crude oil prices before, during, and after the severe Strait of Hormuz disruption?

Did the Strait of Hormuz disruption cause a significant immediate change in daily WTI crude oil prices?

Did the trend of daily WTI crude oil prices change significantly following the Strait of Hormuz disruption?

Research Objectives

To examine the trend of daily WTI crude oil prices before, during, and after the severe Strait of Hormuz disruption.

To estimate the immediate change in daily WTI crude oil prices associated with the Strait of Hormuz disruption.

To determine whether the trend of daily WTI crude oil prices changed significantly following the Strait of Hormuz disruption.

Research Hypotheses

H_0: The Strait of Hormuz disruption had no significant immediate effect on daily WTI crude oil prices.

H_1: The Strait of Hormuz disruption had a significant immediate effect on daily WTI crude oil prices.

H_0: There is no significant change in the trend of daily WTI crude oil prices following the Strait of Hormuz disruption.

H_2: There is a significant change in the trend of daily WTI crude oil prices following the Strait of Hormuz disruption.

H_0: The Strait of Hormuz disruption had a statistically significant immediate effect on daily changes in WTI crude oil prices.

H_3: The Strait of Hormuz disruption had no statistically significant immediate effect on daily changes in WTI crude oil prices.

Literature Review

The Impact of Strait of Hormuz Blockade Risk on Global Crude Oil Prices: Evidence from Daily Market Data

Strategic Importance of the Strait of Hormuz

The Strait of Hormuz occupies a central position in international energy transportation because it connects major Gulf energy exporters with global markets. Sayın and Kılıc (2020) emphasize its strategic, economic, and political importance, particularly for countries dependent on imported oil and natural gas. Similarly, Shahzad et al. (2025) connect the security of the Strait with maritime trade and the energy interests of importing economies. Together, these studies establish that instability surrounding Hormuz can transmit risks beyond the Gulf region.

However, identifying the Strait's strategic importance does not establish the magnitude or duration of its effects on energy prices. These studies primarily provide geopolitical and descriptive explanations, offering limited quantitative evidence on the timing of market responses. White et al. (2013) further examine alternative arrangements for securing shipping through Hormuz, highlighting the importance of international security cooperation. Nevertheless, their scenario-based analysis addresses strategic policy choices rather than estimating observed price changes following a disruption.

Research on supply resilience extends this discussion. Meza et al. (2026), using agent-based modelling of LNG trade, suggest that markets may accommodate shorter disruptions more effectively than prolonged interruptions. Luo et al. (2026) similarly demonstrate the potential benefits of backup suppliers in crude oil procurement. These studies identify mechanisms through which diversification and adaptation may reduce disruption costs. Their findings, however, depend on modelling assumptions and concern different outcomes: LNG trade allocation and procurement costs, respectively. They therefore provide useful explanations of resilience without directly establishing how daily WTI prices responded to the 2026 disruption.

Geopolitical Conflict and Crude Oil Prices

Geopolitical conflict can influence crude oil prices through actual supply losses, transportation restrictions, and changes in expectations concerning future availability. Iqbal and Ikram (2026) describe how tensions surrounding Hormuz connect regional security concerns with global energy-market uncertainty. Gaffor et al. (2026) likewise report that the reviewed literature links disruptions in the Strait with price increases and greater oil-price volatility.

These contributions support the existence of a relationship between geopolitical instability and oil-market behavior, but their explanatory strength differs. Qualitative research can identify political mechanisms and institutional context, while a systematic review can assess patterns across existing studies. Neither approach, by itself, estimates the immediate price response to a particular event. Moreover, the review by Gaffor et al. includes only five studies, limiting the breadth of evidence from which general conclusions can be drawn.

Institutional evidence provides a more direct account of the 2026 market response. The International Energy Agency (2026) documents the near halt in tanker movements through Hormuz and substantial fluctuations in benchmark crude oil prices following the outbreak of hostilities on 28 February. This evidence establishes the relevance of the disruption for oil markets, but descriptive market reporting does not separate the initial response from subsequent changes in the price trajectory.

A further distinction concerns price levels, daily price changes, and volatility. A higher average price indicates a change in the price level, whereas volatility concerns the variability of price movements. These outcomes may respond differently to the same disruption. Consequently, evidence of higher prices should not automatically be interpreted as evidence of a statistically significant increase in volatility. The present study addresses this distinction by estimating price-level and trend changes, examining first-differenced prices, and reporting price variability descriptively.

Connections with Trade and Macroeconomic Variables

The economic consequences of Hormuz disruptions extend beyond crude oil markets. Higher energy costs can increase transportation and production expenses, placing pressure on domestic prices and external trade balances. UN Trade and Development (2026) identifies supply-chain disruption, higher import costs, and inflationary and fiscal pressures as important risks, particularly for vulnerable importing economies (Fakhar et al., 2025).

Country-level research illustrates how these effects vary across economic settings. Rahat et al. (2026) discuss Pakistan's exposure through imported oil and associated pressures on domestic prices and economic stability. Mohamed et al. (2026) examine Somalia's trade system, emphasizing freight charges, insurance premiums, delivery delays, and import dependence. Read together, these studies suggest that the consequences of a common external disruption depend on national exposure and the capacity to absorb higher costs.

Nevertheless, country-specific findings cannot be transferred directly to other economies. Differences in exchange rates, fuel subsidies, trade structures, and domestic institutions may influence the transmission of international energy shocks. Furthermore, descriptive and qualitative evidence cannot fully isolate the effects of Hormuz disruption from other contemporaneous economic pressures.

An et al. (2026) extend the analysis through an input–output stress test, illustrating how energy and logistics costs may spread across production networks. This approach offers a systematic explanation of indirect economic exposure. However, its results are conditional on assumed shocks, inventory absorption, and production linkages. It therefore complements, rather than replaces, empirical analysis of observed market prices.

Iqbal and Ikram (2026) Cited that: Strait of Hormuz is one of the world's most important straits and the shipping route through it is also considered a key check point for global oil and energy movements. The region has long been a flashpoint between Iran and the United States, and there has been a frequent series of military conflicts, economic sanctions, and security threats in the region and internationally, adding to its geopolitical significance. This study analyzes how the Strait of Hormuz is affected by the geopolitical tensions between Iran and the United States, and their influence on the global economy. It examines the impact of the conflict on global energy security, oil prices, international trade and economic stability, as well as political and media narratives on international perceptions of the crisis.

The study employs a qualitative research method based on the interpretivist paradigm and Critical Discourse Analysis (CDA) and thematic analysis to analyze the political speeches, policy documents, media reports, scholarly works and economic analyses related to the incident of Strait of Hormuz. The research examines postcolonial theory and critical geopolitics to provide a critical examination of the framing of security, threat, militarization and power in geopolitics. This study also discusses the impact of global powers on the strategic and economic dominance in the Gulf region through political, military and economic means.

The study's results will show that the tensions in the Strait of Hormuz are not just a regional matter of security but have a significant impact on economic systems and international political relations worldwide. The research also adds to the study of international relations, political economy, and critical geopolitical studies by offering insights into the geopolitical conflict, energy politics and global economic vulnerability in the current world order.

Mohamed et al. (2026). Cited that: This report assesses how Gulf geopolitical tensions and potential Strait of Hormuz disruption affect Somalia's trade-flow system, using Puntland, State of Somalia, as a case study. It situates Somalia within a highly import-dependent and externally exposed trade structure, where food, fuel, fertilizers, construction inputs, and other essential commodities are transmitted through fragile maritime corridors. The study applies a mixed-methods approach, combining secondary macroeconomic and trade data, port-level administrative information, CPI trends, and key informant interviews with market actors, including importers, fuel distributors, livestock exporters, LPG traders, and construction-material suppliers.

The findings show that Gulf-linked disruption does not simply create a temporary trade shock; it restructures Somalia's commercial environment into a high-cost and low-predictability system. Rising freight charges, war-risk insurance premiums, fuel costs, and delivery delays have increased import costs and contributed to cost-push inflation. Puntland CPI evidence shows notable upward pressure from March 2026 in food, energy, cooking gas, and construction materials. On the export side, livestock trade remains highly vulnerable because it is seasonally concentrated around Hajj demand and heavily dependent on Gulf markets. Bosaso Port data indicates declining and

volatile export vessel activity, while import flows remain high but irregular.

The report concludes that Somalia's trade vulnerability is structural, reflecting import dependence, limited export diversification, climate stress, narrow fiscal capacity, and weak adaptive infrastructure. It recommends strategic food and fuel reserves, dedicated storage infrastructure, temporary controls on the re-export of strategic commodities, climate-resilient livestock systems, diversified export markets, and investment in domestic productive sectors.

Changani, J. G., & Dudhagra, P. R. A. G. N. A. (2026) Cited that: This study examines the multi-channel transmission mechanism through which Middle East conflict events particularly within the Iran-Israel-USA strategic triangle propagate into global equity markets over the period 1970-2026. Drawing on a comprehensive dataset of 18 major conflict escalation episodes, the study employs a triangulated empirical framework comprising: (i) event study methodology with Boehmer et al. (1991) standardized cross-sectional tests to measure conflict-event cumulative abnormal returns (CARs); (ii) Structural Vector Auto regression (SVAR) with Kilian (2009) identification restrictions to trace oil price shock transmission; (iii) DCC-GARCH(1,1) with Student-t innovations to quantify time-varying cross-market correlations; and (iv) the Diebold-Yilmaz (2012) rolling-window spillover index to measure directional volatility connectedness across US, European, Asian, and GCC equity indices. Bai-Perron (2003) multiple structural break tests are employed to account for regime changes in the 56-year sample. The study advances five testable hypotheses predicting: negative CARs in energy-importing markets, oil price volatility as the dominant transmission channel, and asymmetric spillover intensity across escalation and de-escalation phases, GCC market heterogeneity, and amplified emerging market vulnerability. This paper makes three original contributions: it provides the most temporally comprehensive analysis of Middle East conflict-equity transmission in the literature; it introduces a conflict regime typology that differentiates nuclear escalation, proxy warfare, direct kinetic, and sanctions events; and it delivers a unified four-channel conceptual framework integrating geopolitical, energy, macroeconomic, and behavioral transmission pathways.

Rahat et al. (2026). Cited that: This paper examines the strategic and economic consequences of disruptions in the Strait of Hormuz on Pakistan's domestic oil prices and on the macroeconomic stability of the country. In Pakistan, where more than 85% of crude oil comes from abroad via the Strait of Hormuz, the price of gasoline has increased 20% because of the closure of the Strait of Hormuz. The detachment between supply and demand created by this situation has led to inflation, currency depreciation, and outages; therefore, it is obvious that more effective energy planning and improved economic policy must take place. This research study is based on qualitative methodology is utilized in which the researcher has been utilized on historical, descriptive and analytical methods with data collected from both Secondary and primary resources. The purpose of this research is to analyze the influence that the Straits of Hormuz has on oil prices and overall stability of the economy in Pakistan. There are many reasons for high gasoline prices in Pakistan create issues with the country's trade balance and contribute to rising inflation within industry and for low-income households alike. Waterways in the region, particularly the Strait of Hormuz, are targets of regional conflicts, which could disrupt the transportation of resources, hence, it is critical for Pakistan to have multiple forms of energy at their disposal; develop alternative forms of energy; creates.

Sayın, Y., & Kılıc, F. (2020). Cited that: The demand for energy in the world is increasing day by day, and for the countries that have an energy deficit, the uninterrupted and safe energy trade has vital importance. An important part of energy trade is provided by the sea and this makes the strategic straits more valuable than ever before in history. The most important of these straits is the Strait of Hormuz (SH), which is a key to the transportation of the Middle Eastern oil and that natural gas flow to Europe, the South Asia and the Pacific. The SH has attracted the attention of the whole world due to the recent diplomatic crisis between the US and Iran. In the event that Iran does not terminate its nuclear activities, the US's declaration on blocking the Iran's petroleum trade and Iran's announcement in shutting down the SH directly to sea trade have increased the tension in the region. It is inevitable that these potential initiatives seriously disrupt the world energy trade. In this regard, the policies of China, India and Turkey, whose economic growths base on energy import, have been a subject of discussion. The aim of this paper is to examine the strategic, economic, and politic importance of the Strait of Hormuz and Effects on Iran's international relations and foreign policy. The paper has the purpose of revealing the attitudes and policies of international actors on the SH and regional politics.

Meza et al. (2026). Cited that: The Strait of Hormuz is the most critical chokepoint of the world. Situated between the Persian Gulf and the Gulf of Oman, it

connects the Middle East with the rest of the world, facilitating oil and gas exports. These exports are crucial for the energy security of the importers and vital for the Persian Gulf countries' economies. However, the Strait is subject to military threats and conflicts from time to time between Iran and other countries. The present work explores the interruption of LNG trade and its implications through different timespans, using Agent-Based Modeling. We built a customized model for the LNG market with GIS features and validated it with past data, accurately matching the past LNG trade. The results show that the market may absorb a short disruption of one month, with the importers finding suppliers, for instance, in the Pacific market. However, in the case of closures longer than six months, the market suffers from imbalances to supply all the importers, and the global LNG trade decreases compared to the base case scenario. Finding solutions to the Hormuz blockade is difficult because there are no alternative maritime routes, and solutions involve long-term endeavors. The proposed solutions are (1) to keep a dissuasive and constant military presence; (2) to build extensive pipeline networks to connect the Middle East to other regions; (3) to build strategic international gas reserves to supply the consumers in case any disruption; and (4) to accelerate transition towards other energy clean sources.

Collins (2026) Cited that: China faces a crude oil deficit of approximately 4–5 million barrels per day (bpd), with a sensitivity range of 3.6–5.4 million bpd, created by Iran's closure of the Strait of Hormuz and a concurrent U.S. counter-blockade of Iranian ports. Supply pressures are further exacerbated by Ukrainian Deep Strike damage to Russian export infrastructure. While China's crude oil stockpiles of roughly 1.4 billion barrels nominally cover 120 days of imports, functional constraints to protect minimum working stocks likely yield an operational runway closer to 60–90 days. This window extends to approximately mid-July; however, because tanker transit from the Gulf to East Asia requires roughly three weeks, strategic decisions must be finalized imminently. A four-part priority hierarchy will govern Beijing's responses: 1) regime survival, 2) avoidance of a U.S.-China military action, 3) strategic concessions on Taiwan, semiconductors, and trade, and finally, 4) Iran's survival as a partner.

An et al. (2026) Cited that: A blockade or severe disruption in the Strait of Hormuz would test energy supply resilience by reducing crude oil and LNG availability and by raising routing, freight, insurance, port-handling, warehousing, and transport-support costs. This paper develops a short-run multi-regional input–output stress test to assess where such an energy-route shock enters the production system, how reserves and inventories reduce pass-through, which cross-border links carry residual costs, and where final demand absorbs them. Using the OECD ICIO 2025 edition for 2022, we map the shock to oil and gas extraction, refining, utilities, transport, and transport-support sectors, with an additional premium for major Gulf energy exporters. We propagate the shock for seven input–output rounds under inventory damping. First-round exposure and later-round burden do not coincide, as energy-intensive materials, aviation services, chemicals, minerals, metals, electronics, and machinery face higher downstream costs through material and logistics purchases. With 30% inventory absorption, the upstream energy shock needed for downstream manufacturing to reach a 10% added-cost threshold rises from 73.6% to 85.3%. The results support targeted reserve release, coordinated rerouting, port-logistics priority, inventory management around high-value links, and continuity protection for vulnerable sectors.

Kassim and Osman (2026) Cited that: This study examines how geopolitical dynamics surrounding the Bab al-Mandab and the Strait of Hormuz influence Somalia's port commerce and maritime security. Specifically, it assesses the effects of global rivalries, regional power competition, and domestic institutional weaknesses on Somalia's trade security, port performance, and maritime governance. The study draws on Classical Geopolitical Theory, Dependency Theory, and Realism. Building on the limitations of these approaches in fragile-state contexts, it introduces the Maritime Geopolitical Vulnerability Theory (MGVT), which argues that proximity to strategic maritime chokepoints can intensify vulnerability rather than confer advantage when institutional capacity is weak. A quantitative, descriptive, and correlational design is employed. Data are collected through a structured questionnaire administered to a stratified random sample of 352 professionals across Somalia's maritime sector. Descriptive statistics and correlation analysis are used to examine relationships among key variables. The results indicate that Somalia's maritime sector faces acute vulnerability. Eighty percent of respondents rated the sector as highly or extremely vulnerable. Global and regional geopolitical tensions are associated with significant increases in freight and insurance costs, while regional power competition contributes to fragmented maritime governance. Institutional capacity is rated as particularly weak, especially at the federal level. The findings suggest that Somalia's proximity to major maritime chokepoints heightens exposure to external

shocks when combined with internal fragility. While exploratory, the results provide preliminary empirical support for MGVT and underscore the importance of institutional reform as a foundation for maritime resilience.

Saleem et al. (2026). Cited that: The 2026 crisis in Hormuz is a pivotal point of change in the development of maritime security and world political economy. This study looks into the case of the Dual Blockade of the Strait of Hormuz, when Iran single-handedly closed the waterway, followed by the counter-blockade by the West, as a paradigm shift in the chokepoint warfare. This paper explores the overlap between kinetic maritime threats and global energy and agricultural supply chains resilience using a qualitative-descriptive research design. The paper concludes that the combination of asymmetric technology, such as Unmanned Surface Vessels (USVs), smart mines and GNSS jamming, has rendered traditional naval deterrence models obsolete. Moreover, the crisis shows that the critical infrastructure, including desalination and port facilities, is increasingly a target in maritime conflict not only due to energy-related issues but according to the Fertilizer-Food-Energy Nexus. The study adds to the body of literature by reconstituting the concept of maritime security in an ecocentric fashion, in that post-hegemonic maritime governance has to discontinue force-projection as the means of its operations, but instead such governance should target the systemic protection of critical infrastructure. The results of the study indicate that the combination of economic leverage and the tactical security infrastructure in the war on the grey zone presupposes a radical change in the international maritime standards and global supply chain risk management.

Al-Kuwari (2026) Cited that: The use of an "oil weapon," despite pre-dating the Arab–Israeli conflict of 1973, first gained conceptual traction in that year, in the context of the Organization of the Petroleum Exporting Countries (OPEC) ceasing oil exports to the United States and other providers of military aid to Israel during the Arab–Israeli ("October") War. It remains a concept recognized today, primarily as a means by which an oil-purchasing country can exert influence on an oil-producing country. Yet neither the efficacy nor the nature of this "weapon" can be assumed, and this article therefore seeks to explore the use of this strategic tool by combining a review of key literature with historical and contemporary examples of its enactment. It is intended that by doing this, the article clarifies the position, utility, and definition of oil as a weapon. Reflecting on the concept of "oil weapon" in this way, the article suggests three things: first, that its current applications have limited efficacy; second, that a change in terminology has occurred by stealth, with "sanctions" now a more appropriate and normalized term; and third, that it is a strategy which will become more pertinent, and potentially more dangerous, as global oil production peaks. As supplies dwindle, there is potential for conflict over the remaining supplies. Ultimately, however, the oil weapon can only be a temporary strategy, before becoming a historical action, potentially replaced by novel forms of energy sanctions, which reflect the evolving use of renewable fuel sources.

Luo et al. (2026). Cited that: Maritime transport faces increasing "double random" risks simultaneous supply disruptions and stochastic demand fluctuations. This study investigates the effectiveness of backup supply strategies in mitigating such risks, using crude oil procurement via the Strait of Hormuz as a case study. We develop a stochastic optimization model comparing two procurement scenarios: sole reliance on a primary supplier versus inclusion of a backup supplier. The model determines optimal order quantities and reservation levels by minimizing total expected costs (shortage costs, excess inventory costs, and backup activation costs). A European refinery sourcing crude oil through the Strait of Hormuz is used to validate the model with industry-calibrated parameters. Results show that incorporating a backup supplier reduces total expected costs by up to 34%, especially when supply disruption probability is high. Sensitivity analysis reveals that as disruption probability increases from 0.1 to 0.3, cost savings grow from 5.4 million to 7.8 million; the optimal order quantity from the primary supplier decreases while backup reservations increase, demonstrating a strategic risk-transfer mechanism. Backup sourcing provides an insurance-like effect, with marginal benefits greatest when primary supply becomes most unreliable. These findings offer quantitative evidence for the strategic value of backup suppliers and practical guidance for improving resilience, flexibility, and cost-efficiency in high-risk maritime supply chains.

White et al. (2013). Cited that: Deemed as the "world's most important chokepoint" for oil and international shipping, the Strait of Hormuz is the main thoroughfare to and from the Arabian/Persian Gulf. A disruption in shipping through the Strait of Hormuz would have severe consequences for the world economy. Without securing by American forces, oil tankers could be threatened by Iran or non-state actors such as pirates. This paper outlines three potential scenarios for U.S. engagement in Hormuz. In the first scenario, "Maintaining

the Status Quo," the U.S. sustains a large, unilateral force in the Arabian Gulf. In the second scenario, "Strategic Partnerships," the U.S. reduces its overall footprint but ensures security through a close partnership with GCC countries. In the third scenario, "Limited Engagement," the U.S. withdraws from the Gulf and cedes leadership roles to a rising China. Based on our analysis, there are two main policy implications. First, U.S. policymakers should emphasize the importance of shipping lanes in the Arabian Gulf and their continued relevance to U.S. interests. Second, GCC states and U.S. policymakers should realize the importance of forging stronger defense partnerships. Not only do their interests converge, but also a partnership could allow U.S. to maintain security with a reduced budget.

Kori (2026) Cited that: The 2026 Iran-Israel-U.S. conflict has evolved into a major global macroeconomic shock with measurable effects on energy markets, inflation, trade flows, sovereign financing, and defense expenditure. This paper examines the conflict through six interlinked transmission channels: energy market disruption, inflation pass-through, trade and shipping realignment, country-level fiscal stress, defense-industrial expansion, and medium-term projections through 2030. The primary transmission mechanism has been the disruption of the Strait of Hormuz and surrounding Gulf-linked shipping routes, through which approximately one-fifth of global oil and a substantial share of liquefied natural gas (LNG) trade normally transits. As of early April 2026, market evidence indicates that tanker traffic through the Strait may have fallen by more than 90% during peak disruption periods, while Brent crude rose above USD 107 per barrel and U.S. crude above USD 111 per barrel, representing one of the sharpest conflict-driven energy repricing's in recent years. These disruptions rapidly transmitted into broader inflationary pressures across advanced and emerging economies through higher fuel prices, freight costs, war-risk insurance premiums, and rising industrial input costs. Recent institutional assessments characterize the conflict as generating both higher prices and slower growth, while financial markets have already reflected these pressures through rising sovereign yields and higher borrowing costs. The paper further incorporates the direct economic effects on Iran and Israel, including export disruption, sovereign-risk repricing, infrastructure strain, war financing, and reconstruction requirements, while identifying key economic beneficiaries such as defense manufacturers, alternative refiners, shipping insurers, and hydrocarbon exporters. Using institutional evidence and scenario-based projections, the study argues that the economic effects of the conflict are likely to outlast its visible military phase, with implications for global inflation trajectories, defense spending baselines, energy security, and trade geography extending through the end of the decade.

Pokorny (2026).Cited that: The coordinated United States-Israeli military operations against Iran on February 28, 2026, designated Operation Epic Fury and Operation Roaring Lion, precipitated the most significant disruption to global energy markets in decades. The assassination of Supreme Leader Ali Khamenei created an unprecedented power vacuum in one of the world's major petroleum-producing nations, threatening the stability of approximately 20% of global oil transit through the Strait of Hormuz. This study employs a current events research methodology to analyze the immediate and projected economic consequences of the crisis, with particular focus on oil and liquefied natural gas (LNG) market disruption, the de facto closure of the Strait of Hormuz, China-Iran energy relations, and the internal dynamics of control over Iran's energy sector during the leadership transition. Drawing on historical precedents from Libya (2011) and Iraq (2003), we assess fragmentation risks and their implications for international energy security.

Gaffor et al. (2026) Cited that: Background: The stability of global oil markets is highly dependent on the uninterrupted flow of petroleum through critical maritime chokepoints, particularly the Strait of Hormuz. Disruptions in this region driven by geopolitical tensions, security threats, and maritime transport interruptions pose significant risks to global energy supply and can trigger substantial fluctuations in oil prices. Despite extensive research, there remains a need to systematically synthesize existing evidence on how such disruptions influence global oil price volatility. Objectives: This study aimed to assess the impact of oil supply disruptions in the Strait of Hormuz on global oil price volatility. Methods: A systematic review is conducted using multiple academic databases covering studies published from 2020 to 2025. Selected studies are appraised using the Joanna Briggs Institute (JBI) tools, and findings are synthesized following SWIM and PRISMA guidelines. Results: Five studies are included. Findings consistently show that supply disruptions significantly increase oil price volatility, driven by geopolitical instability and maritime transport risks. Disruptions lead to immediate price spikes, persistent volatility, and broader economic effects, with duration and intensity influencing the extent of impact. Conclusion: Oil supply disruptions in the Strait of Hormuz are a major driver of global oil price volatility, highlighting the need for stronger energy security and diversified supply strategies.

Shahzad et al. (2025). Cited that: Energy commerce is crucial for both developed and developing nations due to the rising need for energy worldwide. Energy may be transported economically and environmentally via maritime routes, particularly those that cross the Strait of Hormuz. The only marine route for exporting to Europe, Asia, Africa, and major powers is the Persian Gulf, which is home to enormous oil and gas deposits. Because of its strategic importance, any disruption like an Iranian blockade could have a significant effect on the blue economy worldwide. Europe's dependence on Middle Eastern oil has increased as a result of the recent conflict between Russia and Ukraine. During diplomatic problems involving Iran and other significant exporters, the strait attracts international attention. This study looks at how the Strait of Hormuz affects Iran's foreign policy and ties with other countries, as well as its topographical, strategic, economic, and geopolitical significance.

Appiah-Kubi (2026) Cited that: The Strait of Hormuz represents the most critical maritime chokepoint in the global energy system, serving as the transit route for approximately one-fifth of global oil consumption and a significant share of liquefied natural gas exports. The escalation of geopolitical tensions between the United States and Iran in early 2026 has resulted in a profound disruption of oil flows through this strategic corridor, triggering one of the most severe energy supply shocks in modern history. This article provides a comprehensive and empirically grounded analysis of the Strait of Hormuz crisis, focusing on the scale of supply disruption, oil price dynamics, and broader implications for global energy markets. Recent data indicate that approximately 20 million barrels of oil per day normally transit through the Strait, representing nearly 20 percent of global oil consumption and more than 25 percent of seaborne oil trade. However, the escalation of the US–Iran conflict has resulted in a dramatic decline in tanker traffic, with disruptions removing between 13 and 14 million barrels per day from global supply according to market estimates. This supply shock has led to a surge in oil prices, with Brent crude exceeding 120 United States dollars per barrel and projections suggesting potential increases to as high as 190 dollars under prolonged disruption scenarios. The article argues that the crisis exposes deep structural vulnerabilities in the global energy system, particularly the overreliance on narrow maritime chokepoints. It further demonstrates that the economic consequences extend beyond energy markets, affecting inflation, global trade, and economic growth. The findings highlight the urgent need for diversification of energy transport routes and the development of resilient energy policies.

The reviewed literature establishes the strategic importance of Hormuz and identifies several channels connecting geopolitical disruption with energy markets and wider economic outcomes. However, the studies reviewed here provide limited event-specific evidence separating the immediate response of daily WTI prices from subsequent changes in their trend. The present study addresses this gap using daily WTI closing prices and an interrupted time-series framework. Daily observations preserve short-run movements that weekly or monthly averages may obscure, while segmented regression distinguishes an estimated immediate level shift from a change in the subsequent price trend. First-difference analysis additionally examines the event-day price movement in a stationary specification. The study thus contributes evidence on the timing and pattern of oil-market adjustment. Its findings concern WTI price behavior and do not directly estimate effects on inflation, trade, economic growth, or conditional price volatility.

Research Methodology

Research Design

This study employs a quantitative time-series research design to examine the impact of the Strait of Hormuz disruption on global crude oil prices. An Interrupted Time Series (ITS) approach is used to determine whether the disruption produced an immediate change in WTI crude oil prices and whether the price trend changed following the disruption.

Data and Study Period

The study uses secondary daily market data for West Texas Intermediate (WTI) crude oil futures (CL=F) covering the period from 8 August 2025 to 17 August 2026. The dataset contains daily Open, High, Low, Close, Adjusted Close, and trading Volume. The daily closing price, measured in US dollars per barrel, is used as the main dependent variable.

The severe Strait of Hormuz disruption began on 28 February 2026. Because this date is not a trading day, 2 March 2026 is treated as the first post-disruption trading day in the empirical analysis.

Variables

The dependent variable is the daily WTI crude oil closing price (WTI). The main intervention variable is the Hormuz Disruption dummy (HD), coded 0 before the disruption and 1 from the first post-disruption trading day. A continuous Time variable represents the underlying trading-day trend, while Time After measures the number

of trading days following the disruption and is zero before the intervention.

Data Analysis

The analysis is conducted in several stages. First, descriptive statistics are used to summarize WTI crude oil prices, including the mean, standard deviation, minimum, and maximum. Second, a time-series graph and trend analysis are used to illustrate price movements before and after the disruption. Third, stationarity of the WTI price series is assessed using the Augmented Dickey–Fuller (ADF) test. Serial correlation and other relevant regression diagnostics are also examined.

Finally, a segmented Interrupted Time Series regression is estimated to measure both the immediate price change and the change in price trend associated with the Strait of Hormuz disruption.

Econometric Model

The model is specified as:

$$WTI_t = \beta_0 + \beta_1 Time_t + \beta_2 HLD_t + \beta_3 Time\ After_t + \varepsilon_t$$

Where:

WTI t = daily WTI crude oil closing price at trading day t

β0 = intercept; baseline level of WTI crude oil price

Time t = continuous time variable representing sequential trading days

β1 = pre-disruption trend in WTI crude oil prices

HD t = Strait of Hormuz disruption dummy variable

β2 = immediate change in WTI crude oil prices following the disruption

Time After t = number of trading days after the disruption; coded 0 before the disruption

β3 = change in the trend of WTI crude oil prices after the disruption

εt = error term

The disruption dummy is defined as:

$$H_D = \begin{cases} 0, & \text{before the Strait of Hormuz disruption} \\ 1, & \text{during/after the disruption} \end{cases}$$

Statistical significance is evaluated at the **5% level ($p < 0.05$)**. The empirical analysis is conducted using **Stata 15**.

Ethical Considerations

The study relies entirely on publicly available secondary market data and does not involve human participants, personal information, questionnaires, or experiments. Therefore, no direct ethical risks to human participants are involved.

Results

Table 1

Descriptive Statistics of Daily WTI Crude Oil Prices Before, During, and After the Strait of Hormuz Disruption

Period	N	Mean WTI ($/barrel)	SD	Min	Max
Before disruption	140	61.20	2.77	55.27	67.02
During disruption	76	94.38	8.62	71.23	112.95
After disruption	41	78.06	6.21	68.55	92.19
Overall	257	73.70	15.73	55.27	112.95

Note: The pre-disruption period covers observations through 27 February 2026; the severe disruption period covers 2 March–17 June 2026; and the post-severe-disruption period begins on 18 June 2026.

Table 1 presents the descriptive statistics of daily WTI crude oil prices before, during, and after the severe Strait of Hormuz disruption. Before the disruption, the average WTI crude oil price is USD 61.20 per barrel, with a relatively low standard deviation of 2.77, indicating comparatively stable prices. During the severe disruption period, the average WTI price increased substantially to USD 94.38 per barrel, representing an increase of approximately USD 33.18 per barrel, or about 54.2%, relative to the pre-disruption average. Price variability also increased considerably, as shown by the standard deviation of 8.62 compared with 2.77 before the disruption. During this period, WTI prices ranged from USD 71.23 to USD 112.95 per barrel. After the severe disruption period, the average WTI price declined to USD 78.06 per barrel. Although this represented a substantial decline from the disruption-period average, prices remained higher than the pre-disruption

average. The standard deviation also decreased to 6.21, suggesting lower price variability compared with the severe disruption period.

Figure 1. Trend of Daily WTI Crude Oil Prices Before, During, and After the Strait of Hormuz Disruption

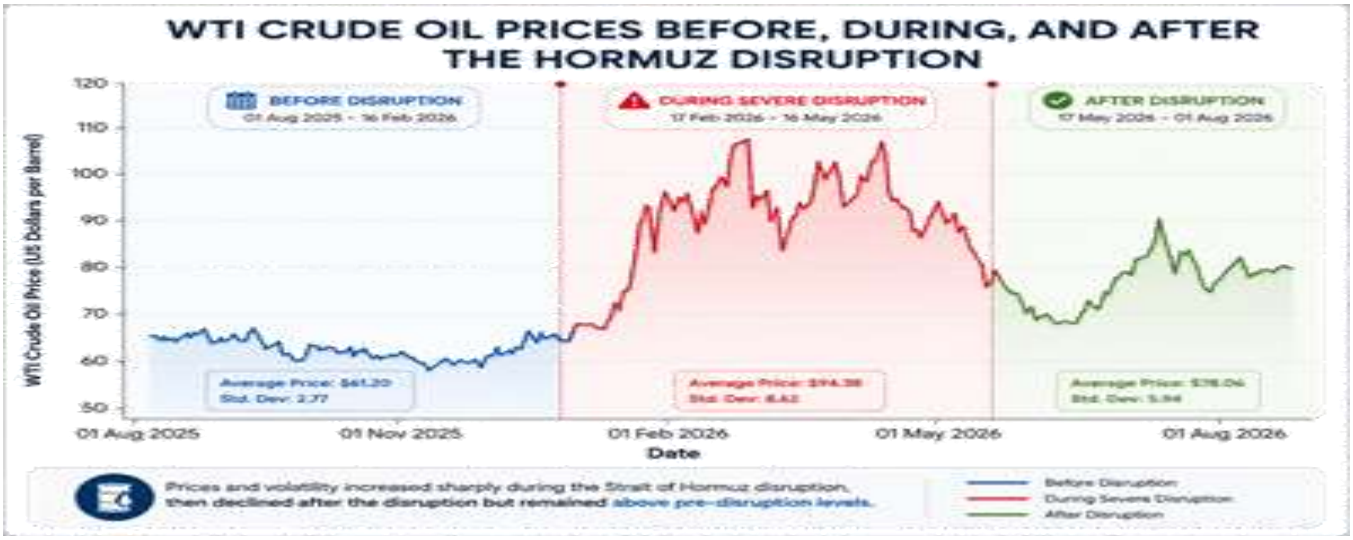


Figure 1 illustrates the movement of daily WTI crude oil prices across the study period. Before the Strait of Hormuz disruption, WTI prices remained relatively stable, generally fluctuating within a comparatively narrow range. Following the beginning of the disruption, a sharp upward movement in crude oil prices became evident, accompanied by considerably greater price volatility. WTI prices increased rapidly during March 2026 and remained at substantially elevated levels throughout much of the severe disruption period. The figure also shows several pronounced price fluctuations during this period, indicating heightened uncertainty in the crude oil market. After the severe disruption period, WTI prices declined markedly from their earlier peaks. Nevertheless, prices generally remained above much of the pre-disruption level. The graphical evidence therefore supports the descriptive statistics and indicates a clear change in WTI crude oil price behavior around the Strait of Hormuz disruption.

Table 2. Augmented Dickey–Fuller Unit Root Test Results

Variable	Specification	ADF Statistic	5% Critical Value	p-value	Decision	Conclusion
WTI Closing Price (Close)	Level, no trend	–1.511	–2.880	0.5282	Fail to reject H_0	Non-stationary
WTI Closing Price (Close)	Level, with trend	–2.002	–3.430	0.6006	Fail to reject H_0	Non-stationary
First Difference (Δ Close)	First difference, no trend	–12.546	–2.880	<0.001	Reject H_0	Stationary
First Difference (Δ Close)	First difference, with trend	–12.522	–3.430	<0.001	Reject H_0	Stationary

Note: H_0 indicates the presence of a unit root (non-stationarity). The null hypothesis is rejected when the p-value is below 0.05.

The Table 2 presents the results of the Augmented Dickey–Fuller unit root tests. At the level form, the ADF statistic for the WTI closing price is –1.511, with a p-value of 0.5282. Since the p-value exceeded the 5% significance level, the null hypothesis of a unit root could not be rejected. Therefore, the daily WTI closing-price series is considered non-stationary in levels. The conclusion remained unchanged when a deterministic trend is included. The ADF statistic is –2.002, with a p-value of 0.6006, indicating that the WTI closing-price series remained non-stationary. The first difference of the WTI closing price is subsequently tested. The ADF statistic decreased substantially to –12.546, with a p-value below 0.001. The null hypothesis of a unit root is therefore rejected, indicating that the first-differenced WTI price series is stationary. The result remained robust after including a deterministic trend, with an ADF statistic of –12.522 and a p-value below 0. 001. These findings demonstrate that the WTI closing-price series is integrated of order one, I (1); that is, the series is non-

stationary in levels but becomes stationary after first differencing. Consequently, a first-difference specification is subsequently employed as a robustness analysis alongside the level-based interrupted time-series model.

Table 3. Diagnostic Test Results for the Interrupted Time-Series Model

Diagnostic Test	Statistic	p-value	Null Hypothesis	Decision	Conclusion
Breusch–Godfrey LM, Lag 1	χ^2 = 183.846	<0.001	No serial correlation	Reject H_0	Serial correlation present
Breusch–Godfrey LM, Lags 1–5	χ^2 = 184.498*	<0.001	No serial correlation	Reject H_0	Serial correlation present
Breusch–Pagan/Cook–Weisberg	χ^2 = 130.17	<0.001	Constant variance	Reject H_0	Heteroskedasticity present
Shapiro–Wilk	W = 0.9289	<0.001	Residuals are normally distributed	Reject H_0	Residuals are non-normal

Note: *For the Breusch–Godfrey specification through lag 5, the table reports the lag-5 joint test statistic. Statistical significance is evaluated at the 5% level.

The table 3 shows the diagnostic results indicate that the conventional interrupted time-series regression violated several standard regression assumptions. The Breusch–Godfrey LM test at lag 1 produced a chi-square statistic of 183.846 ($p < 0.001$), leading to rejection of the null hypothesis of no serial correlation. The test remained statistically significant when additional lags are considered, with the lag-5 specification yielding $\chi^2 = 184.498$ ($p < 0.001$). These results provide strong evidence of serial correlation in the regression residuals. The Breusch Pagan/Cook Weisberg test produced a chi-square statistic of 130.17 ($p < 0.001$). Therefore, the null hypothesis of constant error variance is rejected, indicating the presence of hetero skedasticity. the Shapiro–Wilk test also rejected the null hypothesis of normally distributed residuals ($W = 0.9289$, $p < 0.001$). The residual distribution exhibited a skewness of –0.505 and kurtosis of 5.817, indicating deviation from normality and relatively heavy tails. Generally, the diagnostic tests revealed substantial serial correlation and hetero skedasticity in the conventional regression residuals. Consequently, the study employed Newey–West hetero skedasticity- and autocorrelation-consistent (HAC) standard errors with a maximum lag of five trading days for statistical inference in the main interrupted time-series model. The five-lag specification also corresponds approximately to one trading week.

These corrections provide more reliable standard errors, confidence intervals, and significance tests in the presence of hetero skedasticity and serial correlation.

Table 4. Newey–West Interrupted Time-Series Regression Results

Variable	**Coefficient (β)**	Newey–West SE	t-statistic	p-value	95% Confidence Interval	Result
Time	–0.0094	0.0143	–0.65	0.513	[–0.0376, 0.0188]	Not significant
Hormuz Disruption (HD)	38.2527	4.3506	8.79	<0.001	[29.6847, 46.8207]	Significant
Time After Disruption	–0.1652	0.0530	–3.12	0.002	[–0.2696, –0.0609]	Significant
Constant	61.8569	0.8873	69.71	<0.001	[60.1093, 63.6044]	Significant

Model statistics: N = 257; F (3,253) = 67.99; Prob > F < 0.001. Newey–West maximum lag = 5.**Note:** HD = Strait of Hormuz disruption indicator. Statistical significance is evaluated at the 5% level. Newey–West HAC standard errors are used to account for heteroscedasticity and serial correlation.

The table 4 show that the Newey–West interrupted time-series regression is statistically significant overall, $F(3,253) = 67.99$, $p < 0.001$, indicating that the model variables are jointly associated with movements in daily WTI crude oil prices. The

coefficient for Time is negative but statistically insignificant (β = −0.0094, p = 0.513). This indicates that there is no statistically significant linear trend in daily WTI crude oil prices during the pre-disruption period. The Hormuz Disruption (HD) coefficient is positive and statistically significant (β = 38.2527, p < 0.001). The 95% confidence interval ranged from 29.68 to 46.82. Within the segmented ITS specification, this indicates an estimated immediate upward level shift of approximately USD 38.25 per barrel at the onset of the disruption relative to the level predicted by continuation of the pre-disruption trend. The coefficient for Time after Disruption is negative and statistically significant (β = −0.1652, p = 0.002). This indicates that the slope of WTI crude oil prices changed downward by approximately USD 0.165 per barrel per trading day relative to the pre-disruption slope, a linear-combination test showed that this post-intervention slope is statistically significant (β = −0.1746, SE = 0.0530, t = −3.30, p = 0.001; 95% CI: −0.2790 to −0.0703). Thus, following the initial upward level shift, the fitted WTI crude oil price trajectory subsequently declined by approximately USD 0.175 per barrel per trading day.

Hypothesis Testing

H_0: The Strait of Hormuz disruption had no significant immediate effect on daily WTI crude oil prices.

H_1: The Strait of Hormuz disruption had a significant immediate effect on daily WTI crude oil prices.

Since the HD coefficient is statistically significant (β = 38.2527, p < 0.001), H_0 is rejected and H_1 is supported. The results indicate a statistically significant immediate level change in WTI crude oil prices associated with the onset of the Strait of Hormuz disruption.

H_0: There is no significant change in the trend of daily WTI crude oil prices following the Strait of Hormuz disruption.

H_2: There is a significant change in the trend of daily WTI crude oil prices following the Strait of Hormuz disruption.

Since the Time after Disruption coefficient is statistically significant (β = −0.1652, p = 0.002), H_0 is rejected and H_2 is supported. The results indicate a statistically significant change in the trend of daily WTI crude oil prices following the disruption.

H_0: The Strait of Hormuz disruption had a statistically significant immediate effect on daily changes in WTI crude oil prices.

H_3: The Strait of Hormuz disruption had no statistically significant immediate effect on daily changes in WTI crude oil prices.

Since the first-difference robustness analysis identified a statistically significant immediate event-day price shock of approximately USD 4.11 per barrel (p < 0.001), H_0 is supported and H_3 is rejected. These results indicate that the Strait of Hormuz disruption had a statistically significant immediate effect on daily changes in WTI crude oil prices.

Table 5. First-Difference Newey–West Robustness Analysis

Variable	Coefficient (β)	Newey–West SE	t-statistic	p-value	95% Confidence Interval	Result
Event-Day Pulse	4.1138	0.3666	11.22	<0.001	[3.3918, 4.8358]	Significant
Post-Intervention Indicator (HD)	0.0736	0.3717	0.20	0.843	[−0.6583, 0.8056]	Not significant
Constant	0.0226	0.0698	0.32	0.747	[−0.1149, 0.1601]	Not significant

Model statistics: N = 256, F(2,253) = 1846.46; Prob > F < 0.001, Newey–West maximum lag = 5.

Note: The dependent variable is the first difference of daily WTI closing prices ((Delta WTI_t)). Pulse equals 1 on 2 March 2026 and 0 otherwise. HD equals 0 before the intervention and 1 from 2 March 2026 onward.

The Table 5 shows the stationary first-difference robustness analysis. The coefficient of the event-day Pulse variable is positive and statistically significant (β = 4.1138, p < 0.001), with a 95% confidence interval ranging from 3.39 to 4.84. This indicates that the first WTI trading day following the onset of the Strait of Hormuz disruption is associated with an additional increase of approximately USD 4.11 per barrel in the daily WTI price change relative to the model's underlying

daily movement. The observed WTI closing price increased from approximately USD 67.02 per barrel on 27 February 2026 to USD 71.23 on 2 March 2026, corresponding to an observed one-trading-day increase of approximately USD 4.21 per barrel. The robustness model therefore identifies a statistically significant immediate event-day price shock.

In contrast, the coefficient for the post-intervention indicator (HD) is positive but statistically insignificant ($\beta = 0.0736$, $p = 0.843$). This indicates that, after accounting for the immediate event-day shock, there is no statistically significant persistent increase in the average daily price change over the entire post-intervention period. The constant is also statistically insignificant ($\beta = 0.0226$, $p = 0.747$), indicating no statistically significant average daily price change during the pre-intervention period in this specification.

Table 6. Summary of Research Questions, Objectives, and Empirical Findings

Research Question	Corresponding Objective	Main Empirical Finding	Conclusion
RQ1: What is the trend of daily WTI crude oil prices before, during, and after the severe Strait of Hormuz disruption?	To examine the trend of daily WTI crude oil prices before, during, and after the severe disruption.	Mean WTI price increased from USD 61.20 before the disruption to USD 94.38 during the disruption and subsequently declined to USD 78.06 after the severe disruption.	WTI prices increased sharply and became more volatile during the disruption before declining afterward.
RQ2: Is the Strait of Hormuz disruption associated with a significant immediate change in daily WTI crude oil prices?	To estimate the immediate change in daily WTI crude oil prices associated with the disruption.	The main ITS model estimated a significant immediate level shift of USD 38.25 ($\beta = 38.2527$, $p < 0.001$). The stationary robustness model also identified a significant event-day shock of USD 4.11 ($p < 0.001$).	The onset of the disruption is associated with a statistically significant immediate upward response in WTI prices.
RQ3: Did the trend of daily WTI crude oil prices change significantly following the Strait of Hormuz disruption?	To determine whether the trend of daily WTI crude oil prices changed significantly following the disruption.	The trend-change coefficient is $\beta = -0.1652$ ($p = 0.002$), while the resulting post-intervention slope is -0.1746 ($p = 0.001$).	Following the initial upward shift, WTI prices exhibited a statistically significant downward fitted trajectory.

Table 7. Research Hypothesis Testing

Hypothesis	Statistical Evidence	Decision
H_0: The Strait of Hormuz disruption had no significant immediate effect on daily WTI crude oil prices.	HD: $\beta = 38.2527$, $p < 0.001$	Rejected
H_1: The Strait of Hormuz disruption had a significant immediate effect on daily WTI crude oil prices.	HD: $\beta = 38.2527$, $p < 0.001$	Supported
H_0: There is no significant change in the trend of daily WTI crude oil prices following the Strait of Hormuz disruption.	Time After: $\beta = -0.1652$, $p = 0.002$	Rejected
H_2: There is a significant change in the trend of daily WTI crude oil prices following the Strait of Hormuz disruption.	Time After: $\beta = -0.1652$, $p = 0.002$	Supported
H_0: The Strait of Hormuz disruption had a statistically significant immediate effect on daily changes in WTI crude oil prices.	Event-day effect: $\beta = 4.11$, $p < 0.001$	Rejected
H_3: The Strait of Hormuz disruption had no statistically significant immediate effect on daily changes in WTI crude oil prices.	Event-day effect: $\beta = 4.11$, $p < 0.001$	Supported

The table 7 shows that the results provide evidence against both null hypotheses. First, the coefficient for the Strait of Hormuz disruption indicator is positive and statistically significant ($\beta = 38.2527$, $p < 0.001$). Therefore, H_0 rejected and H_1 is supported, indicating a statistically significant immediate level change in daily WTI crude oil prices associated with the onset of the disruption. Second, the coefficient for Time after Disruption is negative and statistically significant ($\beta = -0.1652$, $p = 0.002$). Therefore, H_0 is rejected and H_2 is supported, indicating that the WTI crude oil price trend changed

significantly following the disruption. The estimated post-intervention slope is also negative and statistically significant (β = −0.1746, p = 0.001), indicating a significant downward fitted trajectory after the initial upward level shift. The stationary robustness analysis further supported evidence of an immediate market response. The event-day Pulse coefficient is positive and statistically significant (β = 4.1138, p < 0.001). However, the post-intervention indicator in the first-difference model is statistically insignificant (β = 0.0736, p = 0.843), suggesting that the initial disruption shock did not translate into a permanently higher average daily rate of WTI price change.

The results indicate that the event-day Pulse coefficient is positive and statistically significant (β = 4.1138, p < 0.001). Therefore, H_3 is supported and H_0 is rejected, confirming that the Strait of Hormuz disruption had a statistically significant immediate effect on daily changes in WTI crude oil prices. This suggests that the disruption caused an immediate upward shock in the WTI crude oil market.

Discussion

The findings of this study are generally consistent with previous literature emphasizing the economic and energy-market importance of the Strait of Hormuz. The observed increase in WTI prices and volatility during the disruption supports Gaffor et al. (2026), who concluded that disruptions in the Strait are associated with immediate oil-price increases and greater volatility. Similarly, Kori (2026) and Appiah-Kubi (2026) reported substantial energy-market and oil-price pressures associated with the 2026 disruption. The findings also align with Iqbal and Ikram (2026), Sayın and Kılıc (2020), and Shahzad et al. (2025), who emphasized that geopolitical instability surrounding this strategic chokepoint can threaten global energy security and economic stability. Moreover, the gradual price adjustment identified in the present study is broadly consistent with Meza et al. (2026), who suggested that energy markets may adapt more effectively to short-term disruptions than to prolonged closures. Overall, the present empirical findings reinforce previous research by showing that disruption of the Strait of Hormuz is associated with a strong short-term oil-market response, increased uncertainty, and subsequent market adjustment.

Conclusion

The study concludes that the Strait of Hormuz disruption is associated with significant changes in daily WTI crude oil prices. WTI prices increased sharply during the disruption period and exhibited greater volatility compared with the pre-disruption period. The interrupted time-series analysis identified a significant upward level change at the onset of the disruption, followed by a significant downward adjustment in the subsequent price trend. The robustness analysis also confirmed a significant immediate event-day price shock, while showing no persistent increase in the average daily rate of price change afterward. Overall, the findings suggest that the disruption generated a strong immediate response in the crude oil market, followed by gradual price adjustment over time.

Recommendation

Strengthen preparedness for sudden oil-price shocks. The significant event-day price increase identified in the first-difference analysis (β = 4.1138, p < 0.001) supports establishing rapid-response contingency plans. Governments should maintain accessible strategic petroleum reserves, while energy-dependent businesses should prepare for sudden increases in fuel and transportation costs.

Diversify suppliers and transportation routes. Average WTI prices increased from USD 61.20 before the disruption to USD 94.38 during the severe disruption period. This finding supports reducing exposure to concentrated supply routes through alternative suppliers, feasible transport arrangements, and backup procurement agreements.

Monitor market adjustment and review temporary measures. The significant downward post-intervention price slope (β = −0.1746, p = 0.001), together with the absence of a significant persistent increase in average daily price changes, supports regularly reassessing emergency measures. Reserve releases and temporary assistance should respond to observed supply conditions and price developments.

Maintain financial buffers during the recovery period. Although average prices declined after the severe disruption, they remained above the pre-disruption average, while price dispersion also remained higher. Energy-dependent businesses should therefore retain contingency budgets and flexible procurement arrangements as prices adjust.

Moreover, based on these findings, policymakers and energy market stakeholders should strengthen energy security measures to reduce vulnerability to disruptions in strategic maritime routes. This may include maintaining adequate strategic petroleum reserves, diversifying oil suppliers and transportation routes, and developing contingency plans for sudden supply disruptions. These

recommendations align with previous studies emphasizing strategic reserves, alternative supply sources, and diversification as key measures for improving resilience to Strait of Hormuz disruptions.

References

Al-Kuwari, G. S. (2026). Oil as a Tool for Political Influence: Opportunities and Risks. *Science Connect*, *2026*(1).

An, F., Ren, S., Liu, X., & Cui, J. (2026). Energy Supply Resilience and Industrial Continuity under a Strait of Hormuz Blockade. *Energies*, *19*(11), 2719.

Appiah-Kubi, C. (2026). The Strait of Hormuz Crisis: How the US–Iran Conflict Is Disrupting Global Oil Supplies. *The Strait of Hormuz Crisis*, *1*(1), 6.

Changani, J. G., & Dudhagra, P. R. A. G. N. A. (2026). From Strait of Hormuz to Wall Street: Transmission of Middle East Conflict into Global Equity Markets. *Available at SSRN 6513599*.

Collins, G. (2026). China's Strait of Hormuz Oil Security and Escalation Playbook. *Available at SSRN 6766599*.

Fakhar, I., Rahnuma, M. S., & Sultanzai, S. (2025). Impact of the Exchange Rate on Inflation in Afghanistan (2015-2023). *Nangarhar University Social Science Journal*, *2*(01), 48–55. https://doi.org/10.70436/nussj.v2i01.29

Gaffor, P. R. M. H., Pang Andaman, H. K., Solaiman, S. M., Balenti, S. H. C., Pasandalan, S. F. D., Pang Andaman, S. A. A., & Sarip, H. A. (2026). The impact of oil supply disruptions in the Strait of Hormuz on global oil price volatility: A systematic review.

International Energy Agency. (2026, March 12). *Oil market report—March 2026*. https://www.iea.org/reports/oil-market-report-march-2026

Iqbal, M. S., & Ikram, M. R. (2026). Geopolitical Tensions in the Strait of Hormuz: The Iran–US Conflict and Its Impact on the Global Economy. *Social Science Review Archives*, *4*(2), 1583-1594.

Kassim, M. G., & Osman, A. I. (2026). The impact of Bab al-Mandab and the Strait of Hormuz on Somalia's ports and maritime security. *Journal of Transportation Security*, *19*(1), 7.

Kori, N. K. S. (2026). The economic impact of the 2026 Iran-Israel-US conflict on global energy, inflation, and trade. *Growth*, 3-19.

Lopez Bernal, J., Cummins, S., & Gasparrini, A. (2017). Interrupted time series regression for the evaluation of public health interventions: A tutorial. *International Journal of Epidemiology*, *46*(1), 348–355. https://doi.org/10.1093/ije/dyw098

Luo, J., Zhang, W., & Yang, Y. (2026). Backup supply strategies under supply disruptions and stochastic demand: a case study of crude oil procurement via the Strait of Hormuz. *Frontiers in Marine Science*, *13*, 1858382.

Meza, A., Ari, I., Al Sada, M., & Koç, M. (2026). Implications of interrupting the Hormuz Strait in the LNG trade. *Journal of Transportation Security*, *19*(1), 28.

Mohamed, Z. A., Abdullahi, A. M., & Abdullahi, A. A. (2026). Assessing the Impact of Strait of Hormuz Disruption on Somalia's Trade-flow System: The Case Study for Puntland State of Somalia.

Pokorny, L. (2026). Economic Consequences of the Power Vacuum in Iran: Analysis of Energy Sector Disruption Following the February 2026 Leadership Decapitation. *Journal of International Politics and Diplomacy, 10 (1), 76, 84*.

Rahat, W., Dilawar, A., & Waqar, M. (2026). The Impact of the Strait of Hormuz on Pakistan's Oil Prices and Economic Stability: A Critical Analysis. *Annals of Human and Social Sciences*, *7*(3), 45-55.

Saleem, Z. B., Khan, S. U., Ashraf, S., & Malik, B. M. (2026). THE GEOPOLITICAL ECONOMY OF CHOKEPOINT WARFARE: ASSESSING SECURITY INFRASTRUCTURE AND ENERGY SUPPLY CHAIN RESILIENCE IN THE 2026 HORMUZ CRISIS. *Policy Journal of Social Science Review*, *4*(6), 241-259.

Sayın, Y., & Kılıc, F. (2020). The Strait of Hormuz and Iran's international relations. *Eurasian Research Journal*, *2*(1), 29–59. https://dergipark.org.tr/en/pub/erj/article/685102

Shahzad, M. H., Liaqat, B. B., & Wakil, I. (2025). Maritime Stability of Strait of Hormuz: A Critical Analysis. *Global Political Review*, *10*(2), 41-49.

UN Trade and Development. (2026). *Strait of Hormuz disruptions: Implications for global trade and*

development. https://unctad.org/publication/strait-hormuz-disruptions-implications-global-trade-and-development

UN Trade and Development. (2026). *Strait of Hormuz disruptions: The burden of oil price shocks on vulnerable economies*. https://unctad.org/system/files/official-document/osginf2026d3_en.pdf

UN Trade and Development. (2026). *Strait of Hormuz disruptions: The burden of oil price shocks on vulnerable economies*. https://unctad.org/system/files/official-document/osginf2026d3_en.pdf

White, K. J., Jojarth, C., & Al-Fattah, S. (2013). The Effect of US Energy Self-Sufficiency on Its Commitment to Secure Shipping Lanes in the Strait of Hormuz. *Available at SSRN 2354418*.